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TO ALL WHOM IT MAY CONCERN:

Be it known that WE, Gall Rupert and Thomas Hornfischer, citizens of Germany, whose post office addresses are Dr.-Försch-Str. 7, 91077 Hetzles, Germany; and Von-Hohenlohe-Str. 5, 91074 Herzogenaurach, Germany; respectively, have invented an improvement in:

AUTOMATION SYSTEM WITH A WORK DRIVE UNIT

of which the following is a

SPECIFICATION

FIELD OF THE INVENTION

[0001] The present invention relates to an automation system with a work drive unit, in which work programs and work data are stored.

BACKGROUND OF THE INVENTION

[0002] Automation systems require a high degree of availability and fail-safe features, both with respect to hardware and software. This is particularly so whenever unusual operating states occur, such as the sudden switching-off or failure of the electrical power supply. Such an interruption of the electrical power supply is generally not problematical. However, in the case of PC-based automation systems with hard-disk operating systems, an inconsistent state of the operating system may occur in an

[0006] If the work drive unit has a system drive unit and an application drive unit, and if the system programs and the system data are stored in the system drive unit and the application programs and the application data are stored in the application drive unit, a separate back-up and restoration of system programs and system data on the one hand and application programs and application data on the other, is possible.

[0007] If the system drive unit has a main system drive unit and an auxiliary system drive unit, and an auxiliary operating system, wherein system data and the back-up program are stored in the auxiliary system drive unit, and a main operating system with its system data stored in the main system drive unit, it is ensured even in the case of "fault-susceptible" operating systems, such as Windows 95, Windows 98 or Windows NT, that after a fault it is always possible for the (robust) auxiliary operating system to be run-up, at least until the back-up program is called up, and after that for the main system drive unit to be restored.

[0008] If the drive units are logical drive units of a common physical drive unit, the automation system according to the invention can be realized in a spatially particularly compact form. If the back-up drive unit is dimensioned in such a way that at least two back-up copies can be stored in it, a second back-up copy can be written to the back-up drive unit without already overwriting the first back-up copy. It is therefore possible always to keep a correct, complete back-up copy in the back-up drive unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Further advantages and details of the present invention are disclosed in conjunction with an exemplary embodiment and drawings, in which:

Figure 1 shows an automation system;

Figure 2 shows a physical drive unit; and

Figure 3 schematically shows the saving and restoring of programs and data.

DETAILED DESCRIPTION OF THE INVENTION

[0010] In Figure 1, an automation system has a central processing unit 1, at least one input unit 2 and at least one output unit 3. The units 1 to 3 are connected to one another via a bus 4. States of an industrial technical installation 5 can be read into the central processing unit 1 via the input unit 2, and control commands to said central processing unit can be output via the output unit 3. The automation system according to Figure 1 is PC-based. It consequently has a PC 6 with an arithmetic and logic unit 7 and a (physical) drive unit 8. The PC 6 is likewise connected to the central processing unit 1 via the bus 4.

[0011] In Figure 2, the physical drive unit 8 is divided into four partitions or logical drive units 9 to 12. In a partitioning table 13 a record is kept of which memory locations of the physical drive unit 8 are assigned to which of the logical drive units 9 to 12. The logical drive units 9 to 12 form a main system drive unit 9, an auxiliary system drive unit 10, an application drive unit 11 and a back-up drive unit 12.

[0012] In the application drive unit 11, application programs 14 and application data 15 assigned to the latter are stored. In the main system drive unit 9, a main operating system 16 and its system data 17 are stored. In the auxiliary system drive unit 10, an auxiliary operating system 18, its system data 19 and a back-up program 20 are stored.

[0013] If the main operating system 16 is robust, i.e., there is only a very small risk of faults in the event of a sudden failure of the electrical power supply, the main system drive unit 9 and the auxiliary drive unit 10 may be combined along with the programs 16, 18, 20 and data 17, 19 stored in them to form a common system drive unit 21. This is indicated in Figure 2 by a broken border around the drive units 9 and 10. Furthermore, it is possible also to combine the application programs 14 and the application data 15 together with the system programs 16, 18, 20 and the system data 17, 19 in a common work drive unit 22. This is also indicated in Figure 2 by a broken border.

[0014] The division into separate drive units 9, 11 is of advantage, however, to the extent that back-up copies can then be created independently of one another. In principle, however, it is also possible to combine system programs 16, 18, 20 and application programs 14 to form work programs, to combine system data 17, 19 and application data 15 to form work data and to store all the programs 14, 16, 18, 20 and data 15, 17, 19 in the common work drive unit 22.

[0015] Generally speaking, when the automation system is run-up, the main operating system 16 is started. The main operating system 16 is, for example, a window-based user interface (Windows 95/98/NT). Alternatively, when the automation system is run up, the auxiliary operating system 18 may be started. The auxiliary operating system 18 is, for example, DOS. The back-up program 20 can be called up from the auxiliary operating system 18. The back-up program 20 is a commercially available back-up program 20, for example Norton Ghost from the Symatec company of Cupertino, CA, USA.

